mechanical keyboard. Crisp taps or impulsive presses on the surface generate key symbols as soon as the finger is released or decision diamond **792** verifies the impulse has peaked, ensuring prompt feedback to the user. Fingers intended to rest on the surface generate no keys as long as they are members of a synchronized finger press or release subset or are placed on the surface gently and remain there along with other fingers for a second or two. Once resting, fingers can be lifted and tapped or impulsively pressed on the surface to generate key symbols without having to lift other resting fingers. Typematic is initiated ether by impulsively pressing and maintaining distinguishable force on a key, or by holding a finger on a key while other fingers on the hand are lifted. Glancing motions of single fingers as they tap key regions are easily tolerated since most cursor manipulation must be initiated by synchronized slides of two or more fingers.

[0297] Other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only, with a true scope and spirit of the invention being indicated by the following claims.

What is claimed is:

1. A method for extracting multiple degrees of freedom of hand motion from successive proximity images, the method comprising:

tracking a plurality of contacts associated with a plurality of hand parts across the successive proximity images;

finding an innermost finger contact and an outermost finger contact for a given hand from the plurality of contacts;

computing a scaling velocity component from a change in a distance between the innermost and outermost finger contacts;

supplementing the computed scaling velocity component with a measure of scaling velocity selective for symmetric scaling about a fixed point between the thumb and other fingers;

filtering the computed, supplemented scaling velocity components; and

transmitting the filtered scaling velocity component as a control signal to an electronic or electromechanical device.

2. The method of claim **1** further comprising:

computing a rotational velocity component from a change in a vector angle between the innermost and outermost finger contacts;

supplementing the computed rotational velocity component with a measure of rotational velocity selective for symmetric rotation about a fixed point between the thumb and other fingers;

filtering the computed, supplemented rotational velocity components; and

transmitting the filtered rotational velocity component as a control signal to an electronic or electromechanical device.

3. The method of claim **2** further comprising:

computing a translation weighting for each contact associated with a finger;

computing translational velocity components for each contact associated with a finger;

computing a translational velocity average from the computed translational velocity components and the computed translation weightings;

filtering the translational velocity average; and

transmitting the filtered translational velocity average as a control signal to an electronic or electromechanical device.

4. The method of claim **3**, wherein the computed translation weightings of innermost and outermost fingers are constant and computed translation weightings of central fingers are inversely related to polar component speeds so as to prevent vertical translation bias while performing hand scaling and rotation but otherwise include all available fingers in the computed translational velocity average.

5. The method of claim **4**, wherein the computed translational weightings are related to the ratio of each finger's speed to a speed of a fastest finger.

6. The method of claim **5**, wherein the computed translational weightings are related to the ratio of each finger's speed to a speed of a fastest finger.

7. The method of claim **1** further comprising:

computing a translation weighting for each contact associated with a finger;

computing translational velocity components for each contact associated with a finger;

computing a translational velocity average from the computed translational velocity components and the computed translation weightings;

filtering the translational velocity average; and

transmitting the filtered translational velocity average as a control signal to an electronic or electromechanical device.

8. The method of claim **2**, wherein the computed translation weightings of innermost and outermost fingers are constant and computed translation weightings of central fingers are inversely related to polar component speeds so as to prevent vertical translation bias while performing hand scaling and rotation but otherwise include all available fingers in the computed translational velocity average.

9. The method of claim **8**, wherein the computed translational weightings are related to the ratio of each finger's speed to a speed of a fastest finger.

10. The method of claim **9**, wherein the computed translational weightings are related to the ratio of each finger's speed to a speed of a fastest finger.

11. A method for extracting multiple degrees of freedom of hand motion from successive proximity images, the method comprising:

tracking a plurality of contacts associated with a plurality of hand parts across the successive proximity images;

finding an innermost finger contact and an outermost finger contact for a given hand from the plurality of contacts;

computing a rotational velocity component from a change in a vector angle between the innermost and outermost finger contacts;

supplementing the computed rotational velocity component with a measure of rotational velocity selective for symmetric rotation about a fixed point between the thumb and other fingers;

filtering the computed, supplemented rotational velocity components; and

transmitting the filtered rotational velocity component as a control signal to an electronic or electromechanical device.

12. The method of claim **11** further comprising:

computing a translation weighting for each contact associated with a finger;